

### **REMARKS**

In response to the Office Action of June 27, 2007, Applicant has amended the application as set forth above. Specifically, Claims 1-3 and 5-7 have been amended, Claim 4 has been canceled without prejudice, and Claims 8 and 9 have been newly added. Upon entry of the amendments, Claims 1-3 and 5-9 are pending in this application. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the above amendments and the following remarks.

#### **Discussion of Information Disclosure Statement**

The Examiner pointed out that the listing of references in the specification is not a proper information disclosure statement. In response, Applicant attaches to this amendment the reference cited in the specification in Form 1449 together with the fee under 37 C.F.R. §1.17(p). Consideration of the reference is respectfully requested.

#### **Discussion of Objection to Specification**

The Examiner objected to the specification due to informalities: Improper headings and arrangement of the specification and other. In response, Applicant has amended the specification as indicated above. Withdrawal of the objection to the specification is respectfully requested.

#### **Discussion of Drawings**

The Examiner objected to the drawings because of missing reference numerals in the drawings. In response, Applicant attaches hereto Replacement Drawing Sheets for Figures 1 and 2 to include elements 20, 30 and 40.

Applicant reminds that Figure 2 had been omitted in the PCT International Application but soon resubmitted to WIPO, accepted by the WIPO and officially listed in the PCT Republication. See Republication under WO/2005/010552 published June 22, 2006 in form of Corrected Version of Pamphlet. To expedite the processing, however, Applicant submits herewith the Replacement Sheets for Figures 1 and 2 to include "Prior Art" labels since each pertains to prior arts.

To also comply with the Examiner's teaching, the specification has also been amended to show all reference labels in Figure 6 in the specification. (See Amendment to the Specification)

### Discussion of Rejection Under 35 U.S.C. § 102(e)

The Examiner rejected Claims 1, 2, 5, and 6 under 35 U.S.C. § 102(e) as being anticipated by Hayashi (US Patent Application Publication No. 2004/0021566). In response, Applicant has amended Claims 1-3 and 5-7. Applicant respectfully submits that Hayashi does not anticipate amended Claims 1, 2, 5, and 6 as discussed below.

### The Law of Anticipation

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *See, e.g., Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

### Disclosure of Hayashi

Hayashi discloses a locating system and method for determining positions of objects, which includes a transmitting station, a receiving station, a data management unit, and a position computer. Hayashi discloses a locating system for determining the location of a transmitting station attached to an item or a person, and more particularly to a location system for determining the positions of a number of transmitting stations. Each of the transmitting stations is considered as a complicated active tag. (See, *e.g.*, Abstract and Fig. 18)

### Currently Amended Claim 1 Recites (emphasis added):

A distance measurement method using ultrasonic, comprising:  
transmitting, from a transmitter, an ultrasonic pulse having specific frequencies;  
receiving, at a receiver, the ultrasonic pulse; and  
amplifying the ultrasonic pulse and extracting a specific frequency of the amplified ultrasonic pulse to find an arrival time of a pulse and converting the arrival time into a distance.

### Hayashi Does Not Anticipate Claim 1

Claim 1 is directed to a distance measurement method and device using ultrasonic waves, which includes transmitting by a transmitter an ultrasonic pulse having specific frequencies, receiving by a receiver the ultrasonic pulse, and amplifying the ultrasonic pulse and extracting a

specific frequency of the amplified ultrasonic pulse to measure the transmission time and then to obtain the distance to the object.

Hayashi, however, fails to teach or disclose amplifying the ultrasonic pulse and extracting a specific frequency of the amplified ultrasonic wave pulse to find an arrival time of a first pulse and converting the time into a distance.

Further, the first identifier extracted from the first ID signal in Hayashi is entirely different from the specific frequency extracted from the amplified ultrasonic pulse in this invention. In other words, the first identifier of Hayashi is used for detecting the intensity of the first signal, while, in the present invention, the specific frequency is extracted instead of the intensity.

If the receiver is far from the transmitter, the intensity of the ultrasonic pulse is difficult to be measured. Accordingly, in the present invention, the specific frequency of the ultrasonic pulse is extracted and used for calculating the distance.

Furthermore, among the features of the claim, Hayashi does not teach or disclose that the transmitter transmits ultrasonic having specific frequencies and a specific frequency of the received ultrasonic *reflected from the object* is extracted to measure the transmission time. Hayashi's transmitting station transmits a first "ID signal" but does not teach or suggest a "specific frequency" of the signal. Also, Claim 1 of the invention discloses that the transmitter and the object are separate from each other and the distance to be measured is between the object and the receiver, while Hayashi's transmitting station is attached or embedded to the object just like an active electronic tag and the distance between the transmitting station and the receiving station.

Therefore, Hayashi does not anticipate all the elements of the invention. Accordingly, Applicant respectfully requests that the anticipation rejection of the amended Claim 1 be withdrawn.

Currently Amended Claim 6 Recited (emphasis added):

A distance measurement method using ultrasonic, comprising:  
setting a first receiver for receiving an ultrasonic pulse at a known position;  
setting a second receiver for receiving an ultrasonic pulse at an object to be measured;  
transmitting an ultrasonic pulse having a specific frequency;

amplifying the ultrasonic pulse and extracting specific frequencies of the ultrasonic pulse received at the first receiver to find an arrival time of the ultrasonic pulse received at the first receiver and converting the arrival time into a distance;

transmitting error information related to a difference between the distance obtained based on the ultrasonic pulse received by the first receiver and the known distance to the second receiver; and

allowing the second receiver to correct the velocity of sound based on the error information.

#### Hayashi Does Not Anticipate Claim 6

For likewise reasons as discussed above for Claim 1, Hayashi does neither teach nor disclose that the transmitter transmits ultrasonic having a specific frequency and specific frequencies of the received ultrasonic are extracted at the first and second receivers. In addition, Claim 6 of the present invention discloses that the receiver is attached to the object, whereas in Hayashi's disclosure a transmitting station is attached to or embedded in the object.

Therefore, Hayashi does not anticipate all the elements of the invention. Accordingly, Applicant respectfully requests that the anticipation rejection of the amended Claim 6 be withdrawn.

#### Discussion of Rejections Under 35 U.S.C. §103(a)

The Examiner rejected Claims 3, 4, and 7 under 35 U.S.C. § 103 (a) as being unpatentable over Hayashi and further in view of Hirose (US Patent No. 6,672,162).

In response, Applicant has canceled Claim 4 without prejudice and amended Claims 3 and 7 to clarify the subject matter of the claims. Therefore, the rejection to Claim 4 is moot and Applicant respectfully disagrees with the Examiner and submits that Claims 3 and 7 are patentable over the cited reference as discussed below.

#### *Prima Facie Case of Obviousness*

To establish a *prima facie case* of obviousness, three basic criteria must be met: first, the prior art reference (or references when combined) must teach or suggest all the claim limitations;

second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; finally, there must be a reasonable expectation of success. M.P.E.P. §2143.

#### Disclosure of Hirose

Hirose discloses an ultrasonic detection apparatus and ultrasonic detection method employing the same, which includes a transmitting transducer (2a) for transmitting an ultrasonic wave and a receiving transducer (2b) for receiving an ultrasonic wave. The ultrasonic waves transmitted and received while the transmitting and receiving transducers are moved within a predetermined circular region (7). (See, *e.g.*, Abstract and FIGS. 1, 3, and 4a)

#### Hayashi and Hirose Do Not Teach or Suggest Claims 3 and 7

Hirose discloses ultrasonic detection apparatus for detecting internal defects or the like of concrete materials. As shown in FIG. 1, the transmitting and receiving transducers (2a, 2b) move on the surface of the concrete to find out the structure of the concrete, in which the relations among the major elements with respect to the object (concrete) are distinctly different from the invention. As such, Hirose does not disclose every features of Applicant's Claim 1 and 7, and therefore does not anticipate Claims 1 and 7. Accordingly, Applicant respectfully requests that the anticipation rejection of Claims 3 and 7 be withdrawn.

As discussed above, neither Hayashi nor Hirose teaches or suggests every elements and features of Claims 1 and 7. Applicant respectfully submits that Claims 3 and 7 are patentable over Hayashi or Hirose alone or in combination.

#### New Claims 8 and 9

Claim 8 has been added with a portion of the limitation of the original Claim 7 in order to clarify the claimed subject matter of Claim 7. Claim 9 has been added to apply more limitation to the amended Claim 1. The added Claims 8 and 9 are supported by the original Claim 7 and the original Specification. No new matter has been introduced.

#### Dependent Claims


Although Applicant has not addressed all the issues of the dependent claims, Applicant respectfully submits that Applicant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Applicant believes that each claim is patentable on its own merits. Claims 2-3, 5, and 8-9 are dependent either directly or indirectly on the above-discussed independent Claims 1, 6, and 7. Applicant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Applicant respectfully requests the withdrawal of all claim rejections and prompts allowance of the claims.

#### CONCLUSION

The Applicants have endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In view of Applicant's amendments to the claims and the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Should the Examiner have any remaining concerns, which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectively submitted,

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James E. Bame  
Regis. No. 44521  
Tel: 213-384-7200  
IPLA P.A.  
3580 Wilshire Blvd 17th Fl.  
Los Angeles, CA 90010